Conclusions
Most students use new technologies in their daily lives, with less than half of them considering using these technologies in the right posture. It was also verified that individuals with MSS used more times new technologies than individuals without MSS. The time of use of new technologies increases with the age.

Keywords
New technologies, Musculoskeletal symptoms, Children and adolescents.

O4

An ecological approach to fall risk factors for preventive interventions design: a pilot study

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Background
Recent literature reinforces that interventions for fall prevention should include multimodal training [1]. However, even multimodal training tends to focus on exercises separately in single physical, cognitive or environmental hazards variables. An ecological approach to explain phenomena's such as fall occurrence, underlines not only the accumulative effect of isolated variables but also interactions between different variables.
Objective
To reduce a set of correlated variables to a smaller number that may explain fall occurrence.
Methods
187 older adults aged 65 to 96 years were assessed for falling risk factors. Principal component analysis (PCA) was performed including data from the 6-minute walk test (6MWT) [2], Gait Scale [3], Fullerton Advanced Balance Scale (FAB) [4], body composition - fat body mass percentage (FBM %), Mini-Mental State Examination (MMSE) [5], Environmental Hazards Scale (EH) [6], health conditions (HC), time up and go test (TUG) [2] and the Epworth Sleepiness Scale (ESS) [7]. Factors with eigenvalues of at least 1.0 were retained and a varimax rotation was used to produce interpretable factors. A binary regression analysis was performed using the forward stepwise (conditional) technique to identify the most significant components explaining fall occurrence. Receiver operating characteristics (ROC) curves were used to assess the discriminative ability of the logistic model.
Results
Three principal components were identified. In component 1, the dominant variables concerned physical and cognitive fit (6MWT, Gait Scale, FAB, MMSE, TUG), in component 2 dominant variables concerned health and environmental conditions (FBM %, EH, HC), whereas in component 3, the dominant variable concerned alertness (ESS). These components explained cumulatively 37%, 56% and 70% of the variance in fall occurrence. Logistic regression selected components 1 (OR: 0.527; 95% CI: 0.328–0.845) and 2 (OR: 1.614; 95% CI: 1.050–2.482) as predictive of falls. The cut-off level yielding the maximal sensitivity and specificity for predicting fall occurrence was set as 0.206 (specificity = 72.7%, sensitivity = 47.7%, and the area of the ROC curve was computed as 0.660 (95% CI: 0.564-0.756).
Conclusions
This pilot study showed that multiple correlated variables for fall risk assessment can be reduced to three uncorrelated components characterized by: physical and cognitive fit; health and environmental conditions; and alertness. The first two were the main determinants of falls. Recommendations: Interventions for fall prevention should privilege multimodal training including tasks that work simultaneously physical fitness, cognitive fitness and alertness, considering participant's specific health and environmental conditions.

Trial Registration
NCT03446352

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Keywords
Principal component analysis, Falling risk, Physical fitness, Cognitive fitness, Environmental hazards.

O5

Relationship between smartphone use and musculoskeletal symptoms in adolescents

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Background
We are currently facing a society of adolescents who are increasingly dependent on technology, in particular the smartphone, and this phenomenon can even lead to limiting situations in which the person's physical well-being is called into question. Intensive use of the smartphone may contribute to a decrease in physical activity and generate musculoskeletal symptoms (MMS).
Objectives
To verify the existence of a relationship between the use of the smartphone and: 1) MMS; 2) vigorous, moderate and sedentary physical activity
Methods
An observational, analytical, cross-sectional study was conducted on a sample of 834 adolescents from five schools in the regions of Viseu, Vila Real and Porto. Data collection was performed through online questionnaires through the Qualtrics program, in order to perform the sociodemographic characterization of the sample and to determine behavioral habits related to health, as well as to the use of new technologies. Musculoskeletal symptoms were evaluated through the Portuguese version of the Nordic musculoskeletal questionnaire. (NMQ) and physical activity through the International Questionnaire of Physical Activity (IPAQ).
Results
The adolescents who used the smartphone for the most time referred MMS in the cervical ($p < 0.001$), thoracic ($p = 0.017$), lumbar ($p < 0.001$), shoulders ($p < 0.001$), wrists/hands ($p = 0.003$) and knees ($p = 0.013$).